



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/667,720

09/22/2003

Steffen Sonnekalb

J&R-1126

9696

24131

7590

11/22/2006

LERNER GREENBERG STEMER LLP

P O BOX 2480

HOLLYWOOD, FL 33022-2480

EXAMINER

PAN, DANIEL H

ART UNIT

PAPER NUMBER

2183

DATE MAILED: 11/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/667,720	Applicant(s) SONNEKALB, STEFFEN	
	Examiner Daniel Pan	Art Unit 2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>09/22/03</u> . | 6) <input type="checkbox"/> Other: _____ |

1. Claims 1- 9 are presented for examination.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Volk (6,457,095) .

2. As to claim 1, Volk taught a program-controlled unit including an instruction execution pipeline having a plurality of pipeline stages (see fig.4A, [pipeline timing]) , the program-controlled unit configured for executing instructions instructing the program-controlled unit to stop an individual one of a plurality of pipeline stages (see the orderly shutdown of the pipeline stages in col.6, lines 35-48) and the instructions stipulating which particular one of the plurality of pipeline stages or which particular ones of the plurality of pipeline stages should be stopped (see shutdown of the pipeline stages based on the delay in col.6, lines 35-48), stopping the pipeline stages without conditions (see orderly shutdown of the pipeline stages in col.6, lines 35-48, see also the stopping of the normal pipeline stages in col.7, lines 46-64)

3. Komura (6,216,232) in view of Volk (6,457,095) and Douglas et al. (6,609,193) in view of Volk (6,457,095) are also being used to reject claims 1-9.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Komura (6,216,232) in view of Volk (6,457,095).

5. As to claim 1, Komura taught a program-controlled unit including an instruction execution pipeline having a plurality of pipeline stages (see col.6, lines 22-25 for pipeline stages, see also figs.2,3,16), the program-controlled unit configured for executing instructions (see fig.7 for instructions for stalling) instructing the program-controlled unit to stop (see clock stop instruction in col.4, lines 35-55, col.7, lines 14-18, see col.11, lines 5-7, lines 35-37) an individual one of a plurality of pipeline stages (see the halt to respective blocks in col.6, lines 48-60, col.7, lines 63-67), more than one of the plurality of pipeline stages (see the halt to respective blocks in col.6, lines 48-60 col.6, lines 48-60, col.7, lines 63-67), or all of the plurality of pipeline stages (not explicitly shown); and the instructions stipulating which particular one of the plurality of pipeline stages or which particular ones of the plurality of pipeline stages should be stopped (see the identity decision for deciding the respective blocks to stop in col.6, lines 2-18, lines 48-60).

Art Unit: 2183

6. Komura did not explicitly show the stop of all pipeline stages as claimed.

However, the examiner holds that Komura could also stop all the pipeline stages because Komura's halt clock was able to all operations of all blocks. The operations (e.g. fetch, read, write, decode, etc) involved in the blocks (e.g. memory, peripherals, CPU), were in pipelined phases (see col.6, lines 25-36). Therefore, although not explicitly shown, stopping all pipelined stages could be done.

7. Komura did not specifically show stopping the pipeline stages without creating a condition for the pipeline stages to stop as claimed. However, Volk taught a schedule may stop a normal pipeline stage (col.6, lines 35-48, col.7, lines 46-63). It would have been obvious to one of ordinary skill in the art to use Volk in Komura for stopping the pipeline stages without creating the condition as claimed because the use of Volk could provide Komura the ability to scan the status of the pipeline processing at a predefined processing point, therefore, enhancing the control ability of Komura's processor at an arbitrary stage, and because Komura also taught the identity decision for deciding the respective pipeline processing stages to stop (see blocks to stop in col.6, lines 2-18, lines 48-60), which was a suggestion of the need for inhibiting a pipelined stage or block at any condition in order to expand the system capabilities in the pipelined system. For the above reasons, provided a motivation.

8. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Douglas et al. (6,609,193) in view of Volk (6,457,095).

9. As to claim 1, Douglas taught a program-controlled unit including an instruction execution pipeline having a plurality of pipeline stages; the program-controlled unit configured for executing instructions (see fig.7 for instructions for stalling) instructing the program-controlled unit to stop (see stalled clock in fig.8) an individual one of said plurality of pipeline stages, more than one of said plurality of pipeline stages (see clocks stalled) , or all of said plurality of pipeline stages (see all clocks stalled) ; and the instructions stipulating which particular one of the plurality of pipeline stages or which particular ones of the plurality of pipeline stages should be stopped (see the instructions for the stalling conditions in the pipeline stages in col.11, lines 11-67, col.12, lines 1-22).

10. Douglas did not specifically show stopping the pipeline stages without creating condition for the pipeline stages to stop as claimed. However, Volk taught a schedule may stop a normal pipeline stage (col.7, lines 46-63). It would have been obvious to one of ordinary skill in the art to use Volk in Douglas for stopping the pipeline stage without condition as claimed because the use of Volk could provide Douglas the capability to provide testing function on the pipeline processing at predetermined stage, thereby, reducing the potential latency caused by pipeline delays, and because Douglas also taught detection of which particular one of the plurality of pipeline stages or which particular ones of the plurality of pipeline stages should be stopped (see the instructions for the stalling conditions in the pipeline stages in col.11, lines 11-67, col.12, lines 1-22), which was a suggestion of the need to stop a pipeline stage without a condition in order to minimize the actual delay, in doing so, provided a motivation.

Art Unit: 2183

11. As to claim 2, Douglas also specified the length of time of the stage to be stopped (see time 1 in col.11, lines 10-13, see time 2 in col.12, lines 1-2).

12. As to claims 3,4, 5,6, Douglas also configured for setting a time for respective one of the plurality of pipeline stages at a particular time after executing (or passed through the pipeline) an instruction that instructs stopping (see the particular clock x for staling the pipe stage based on the given command in fig.7).

13. As to claim 7, Douglas also instructed stopping, or other instructions can stipulate a time for beginning to stop a respective one the plurality of pipeline stages (see the stalls by respective commands for each pipe stage in col.8, lines 50-67, col.9, lines 1-13).

14. As to claim 8, Douglas also configured for blocking execution of the instructions, which instruct stopping (see blocking of stall in col.9, lines 50-58, col.10, lines 1-6, col.13, lines 38-42).

15. As to claim 9, Douglas also configured for treating the instructions, which instruct stopping, as unknown instructions when execution of the instructions, which instruct stopping, is not enabled (see the thread ID of the instruction was not considered in col.10, lines 1-6, see the thread ID 0 blocking the instruction in col.13, lines 38-42).

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Stotzer et al. (6,691,240) is cited for the teaching of pipelines stages with stop cycles (see the NOPs in fig.6a,b, col.9, lines 51-67, col.10, lines 1-25).

b) Barton et al. (6,233,389) is cited for the teaching of instructing to stop pipeline stages without condition (see the stopping of part of pipeline at user's whim in col.10, lines 1-5).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Pan whose telephone number is 571 272 4172.

The examiner can normally be reached on M-F from 8:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chan, can be reached on 571 272 4162. The fax phone number for the organization where this application or proceeding is assigned is 703 306 5404.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit: 2183

21 Century Strategic Plan

RUSSEL H. PAN
PRIMARY EXAMINER
GROUP

